About the research centre or Inria department

The Inria Sophia Antipolis - Méditerranée center counts 37 research teams and 9 support departments. The center’s staff (about 600 people including 400 Inria employees) is composed of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrators. 1/3 of the staff are civil servants, the others are contractual. The majority of the research teams at the center are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Six teams are based in Montpellier and a team is hosted by the computer science department of the University of Bologna in Italy. The Center is a member of the University and Institution Community (ComUE) “Université Côte d’Azur (UCA)”.

Assignment

Google’s federated learning already enables mobile phones, or other devices with limited computing capabilities, to collaboratively learn a machine learning model while keeping all training data locally, decoupling the ability to do machine learning from the need to store the data in the cloud. While Google envisions only users’ devices, it is possible that part of the computation is executed at other intermediate elements in the network. This new paradigm is sometimes referred to as Edge Computing or Fog Computing. Model training as well as serving (provide machine learning predictions) are going to be distributed between IoT devices, cloud services, and other intermediate computing elements like servers close to base stations as envisaged by the Multi-Access Edge Computing framework. This approach provides at least three benefits.

1. Reduce network load. According to recent estimates, there are 7 billions IoT devices deployed in the world. This number should increase by a factor 3 by 2025. Routing the raw data traffic generated by these devices to a few data centers will not be feasible. It is required to extract relevant features as close as possible to the locations where data is generated.

2. Reduce latency. ML models will be used by IoT devices to take actions in the physical world. Future wireless services for connected and autonomous cars, industrial robotics, mobile gaming, augmented and virtual reality have strict latency requirements, often below 10 ms and below 1ms for what is now called the tactile internet. A key element to satisfy such constraints is to run these services closer to the user, directly on IoT devices. Edge computing also ensures that applications are not disrupted in case of limited or intermittent network connectivity.

3. Preserve privacy. Data captured by IoT devices can contain sensitive or private information. Pre-processing at the edge can make sure that sensitive information is processed in a way that hides the original data and reduces the risk of data leakage or misuse.

General Information

- Theme/Domain: Networks and Telecommunications
- System E & Networks (BAP E)
- Inria Center: CRI Sophia Antipolis – Méditerranée
- Starting date: 2019-11-01
- Duration of contract: 1 year, 6 months
- Deadline to apply: 2019-04-21

Contacts

- Inria Team: NEO
- Recruiter: Neglia Giovanni / giovanni.neglia@inria.fr

About Inria

Inria, the French national research institute for the digital sciences, promotes scientific excellence and technology transfer to maximise its impact. It employs 2,400 people. Its 200 agile project teams, generally with academic partners, involve more than 3,000 scientists in meeting the challenges of computer science and mathematics, often at the interface of other disciplines. Inria works with many companies and has assisted in the creation of over 160 startups. It strives to meet the challenges of the digital transformation of science, society and the economy.

Instruction to apply

Applications must be submitted online on the Inria website. Collecting applications by other channels is not guaranteed.

Before applying, it is highly recommended to contact the scientific officer preferably before 07 April.

Defence Security:

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorization to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy:

As part of its diversity policy, all Inria positions are accessible to people with disabilities.

Warning: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.
removed or aggregated with data from other devices to preserve user’s profile.

The postdoc candidate is invited to investigate how both learning tasks and prediction services can be effectively distributed across different elements in the network, taking into account computation/communication constraints.

**Main activities**
Research.
Possible supervision of interns.

**Skills**
Competences in probability, statistics, optimization, and mathematical modeling are essential. Solid programming and IT skills are necessary, along with strong communication abilities.

**Benefits package**
- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

**Remuneration**
Gross Salary: 2650 brutto per month